

Remarks:

Reconsideration of the application is respectfully requested.

Applicant gratefully acknowledges that the application is presently in condition for allowance except for certain formal matters. Claims 1 - 20 are presently pending in the application. Claim 17 has been amended to remove an item number from that claim. In item 4 of the Office Action, it has been indicated that were Applicant to overcome the objection to claims 1, 7, 10 - 11 and 17 - 20, then claims 1 - 20 would be allowable over the prior art.

In item 2 of the above-identified Office Action, the specification was objected to because legal phraseology, such as "the invention" was used in the abstract. Applicant has amended the abstract to remove the legal phraseology. A clean copy of the abstract, as required by the rules, is additionally enclosed herewith.

In item 3 of the Office Action, claims 1 - 20 were objected to for the following informalities. Claims 1 and 10 were objected to because it was allegedly unclear how the "a rise time of the current" and "a current rise" are measured and which device is used for that purpose. It was additionally indicated that it was allegedly unclear how "a rise time of the current" or "a current rise time" are related to a winding

temperature of a drive motor. Applicant respectfully submits that the meaning of the phrases "a rise time of the current" and "a current rise time" are clearly understandable from a reading of Applicant's specification. More particularly, the rise time of the current (a.k.a. "current rise time") is the time from switching on the current until a measurement time at which the current reaches a reference current. As such, the "rise time of the current" is represented in the present application by the time t_1 . See page 21 of the instant application, lines 3 - 4. This is further defined on page 19 of the instant application, line 24 - page 20, line 19, which states:

"When the motor 1 is stationary, one switching transistor in each of two different half bridges, for example, 2311 and 2322 in the half bridges 231 and 232, respectively, is switched on by a pulse pattern that is predetermined by the microcontroller 24 so that a current i flows through the two motor windings 11, 12, corresponding to the assumed star connection of the asynchronous motor winding of the motor 1. Due to the relatively low resistance of the windings and semiconductors in this circuit, the current level and a voltage value produced in consequence across the shunt 25 will reach a reference value i_{ref} for the evaluation circuit 237 in a short time t_1 . The signal change initiated by this is evaluated by the microcontroller 24, and the drive for the switching transistors 2311 and 2322 mentioned above is switched off so that the intermediate circuit voltage is disconnected from the windings 11, 12 of the motor 1. The time t_1 is now a measure of the magnitude of the current flow. Once this time t_1 has been measured, the intermediate circuit voltage U is, in each case, evaluated by the microcontroller 24 through the voltage divider 238 for tapping off the intermediate circuit voltage and the A/D converter 241." [emphasis added by Applicant]

This current rise time t_1 may also be ascertained by Fig. 2 of the instant application, as the time it takes the current i to reach I_{ref} . As such, it is believed that the phrases "a rise time of the current" and "a current rise time" would be understandable by a person of skill in the art from a reading of the present application and a review of Fig. 2 of the instant specification.

Claim 7 was objected to in the Office Action, because the phrase "an acknowledgement" was allegedly unclear. Applicant respectfully disagrees that the phrase "an acknowledgement" used in claim 7. Page 9 of the instant application, lines 12 - 14, state:

"In accordance with yet a further mode of the invention, **an acknowledgement** is passed to a motor controller to reduce operating phases of the motor."
[emphasis added by Applicant]

This "acknowledgement" (i.e., "signal change", as used herebelow) that is passed to the motor controller (i.e., "microcontroller") for reducing the "operating phases of the motor" is further described on page 19 of the instant application, line 24 - page 20, line 13, which states:

"When the motor 1 is stationary, one switching transistor in each of two different half bridges, for example, 2311 and 2322 in the half bridges 231 and 232, respectively, is switched on by a pulse pattern that is predetermined by the microcontroller 24 so that a current i flows through the two motor windings 11, 12, corresponding to the assumed star connection of the

asynchronous motor winding of the motor 1. Due to the relatively low resistance of the windings and semiconductors in this circuit, the current level and a voltage value produced in consequence across the shunt 25 will reach a reference value i_{ref} for the evaluation circuit 237 in a short time t_1 . The signal change initiated by this is evaluated by the microcontroller 24, and the drive for the switching transistors 2311 and 2322 mentioned above is switched off so that the intermediate circuit voltage is disconnected from the windings 11, 12 of the motor 1."

Note that page 17 of the instant application, lines 3 - 8 state:

"A **three-phase** inverter 23 is operated from the intermediate circuit 22, and substantially includes three half bridges 231, 232, 233, which, in turn, each have two switches in the form of power semiconductors 2311, 2312, 2321, 2322, 2331, 2332 and associated drivers 234, 235, 236.

As such, it is clear from the above portion of the instant specification that an "acknowledgement" (i.e., **the signal change**) is passed to the "motor controller" (i.e., **microcontroller 24**) to "reduce the operating phases of the motor" (i.e., **"and the drive for the switching transistors 2311 and 2322 . . . is switched off"**). As such, Applicant believes that the subject matter of claim 7 is clearly defined in the specification of the instant application.

Claims 11 and 18 - 20 were objected to because it was allegedly unclear what "time measurement apparatus" represents. Additionally, it was questioned in the Office

Action whether the "time measurement apparatus" was shown in the drawings. Applicant respectfully traverses the above objection, as will be discussed herebelow, and affirm that the "time measurement apparatus" is shown in the drawings. The "time measurement apparatus" is fully discussed in the specification of the instant application, for example, page 10 of the instant application, line 12 - page 11, line 2, states:

"With the objects of the invention in view, there is also provided an apparatus for measuring a winding temperature of a drive motor having motor windings, the motor windings having a temperature-dependent resistance, including an inverter for feeding current to the motor windings, a current measurement device, a voltage measurement device, a computation unit connected to the current measurement device and to the voltage measurement device for determining an instantaneous resistance of the motor windings, the computation unit being programmed to determine one of a temperature change and a temperature of the windings based upon one of the instantaneous resistance and an instantaneous change in the temperature-dependent resistance, and at least one of at least one threshold value comparator and **one time measurement apparatus** and the current measurement device measuring in a defined time interval and for passing on an analog or a digital signal to an evaluation device." [emphasis added by Applicant]

See also, the instant application, page 12, lines 22 - 23; page 123, lines 16 - 17; and page 14, line 18. Applicant's "one time measurement apparatus" is further clarified in the instant application, on page 11, lines 11 - 13, which states:

"In accordance with again a further feature of the invention, the threshold value comparator and **the time measurement apparatus** are part of the microcontroller." [emphasis added by Applicant]

And, page 18 of the instant application, lines 3 - 9, which states:

"The current evaluation circuit 237 substantially includes a comparator circuit, which compares a current value with a reference value. **When a reference value is reached, a status change takes place in a binary signal to complete a time measurement**, whose result is evaluated by the microcontroller 24 using a formula that will be derived in detail in the following text."
[emphasis added by Applicant]

As such, it is believed that the "**time measurement apparatus**", which the instant application specifies can be part of the microcontroller 24, is clearly set forth in the instant application and is particularly shown in Fig. 1 of the drawings (see, microcontroller 24, there shown).

Claim 17 was objected to in the Office Action, because it was allegedly unclear what "a downstream control unit" represents. Applicant respectfully disagrees. Page 24 of the instant application, line 22 - page 25, line 8, states:

"To simplify the method to a major extent, the monitoring is carried out through two window comparators, using two different threshold values. Such a comparator, therefore, does not pass on any analog signals, but only a digital switching signal. The first threshold is somewhat above the PWM control current limit. When the inverter 23 is operating correctly, such current load is generally not reached. The value of the first threshold is approximately 60% of that of the second threshold, which also defines the current overload point. When the second threshold is reached, the microcontroller 24 or a downstream control unit,

thus, carries out an emergency disconnection of the motor 1, immediately." [emphasis added by Applicant]

See also, page 12 of the instant application, line 4. As such, the use of a **downstream control unit**, as an alternative to the microcontroller 24 (i.e., claim 17 recites and one of said microcontroller and a downstream control unit), is clearly set forth in the specification of the instant application. A person of skill in the art, reading Applicant's claim 17 in light of the current specification would clearly understand "a downstream control unit" to be a control unit, just like that of microcontroller 24, but further down the signal path.

In view of the foregoing, Applicant believes that the claims are both clear and definite, and that the above addresses the Examiner's objections in item 3 of the Office Action.

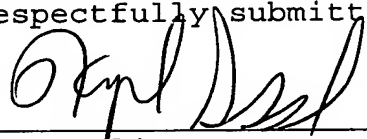
In view of the foregoing, reconsideration and allowance of claims 1 - 20 are solicited.

In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate receiving a telephone call so that, if possible, patentable language can be worked out.

If an extension of time for this paper is required, petition
for extension is herewith made.

Please charge any fees that might be due with respect to
Sections 1.16 and 1.17 to the Deposit Account of Lerner and
Greenberg, P.A., No. 12-1099.

Respectfully submitted,



For Applicant

Kerry P. Sisselman
Reg. No. 37,237

KPS:cgm

April 18, 2005

Lerner and Greenberg, P.A.
Post Office Box 2480
Hollywood, FL 33022-2480
Tel: (954) 925-1100
Fax: (954) 925-1101